

ABSTRACT

Methods and apparatus are provided for frequency and power scaling a drive assembly for a brushless direct current (BLDC) motor. The apparatus comprises multiple groups of half-bridge switching element assemblies connected to respective “In-Hand” phase windings of the BLDC. Each group of half-bridge assemblies receives time sliced commands from a processor so that the resultant frequency of the output drive signal can be higher than the frequency capability of an individual switching element. By effectively paralleling groups of half-bridge assemblies connected to respective In-Hand phase windings, the current delivered to the phase windings can be greater than the individual current capability of the switching elements in the half-bridge assemblies. The electromagnetic field generated in the “In-Hand” phase windings forces essentially equal current sharing in the respective driver switching elements. The disclosed techniques enable frequency and power scaling of motor drive assemblies using standard low-cost components.